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ABSTRACT

The objective of this study was to determine whether there were verbal interaction differences between junior/community college and university settings and among disciplines. Theoretically, student achievement and student attitudes are influenced by the types of verbal interactions taking place within classrooms. Forty-eight different classes located in three junior colleges and a university in Texas were used to collect the data. Over 39,000 tallies representing approximately 32.5 hours of time were recorded using Flander's categories for interaction analysis. An analysis of variance revealed significant differences between two-year college instructors and university instructors in several verbal categories. Two-year college teachers used more praise and reinforcement, asked more questions of their students, and reflected greater verbal flexibility than did the university instructors. Data tables outline analysis of variance groupings among course disciplines (English, Chemistry, History/Political Science, Economics, Psychology, Mathematics, and Biological Sciences). (Author/MB)

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VERBAL INTERACTION IN JUNIOR/COMMUNITY COLLEGE AND UNIVERSITY CLASSROOMS: DO DISCIPLINES AND SETTINGS DIFFER?

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Abstract

The objective for this study was to determine if there were verbal interaction differences between junior/community college and university settings and among disciplines. Theoretically, student achievement and student attitudes have been influenced by the types of verbal interactions taking place within classrooms. Forth-eight different classes located in three different junior colleges and a university in Texas were used to collect the data. Over 39,000 tallies were recorded. The classrooms were grouped according to subject matter; and, an analysis of variance revealed significant differences between two-year junior college instructors and university instructors in several verbal categories. Two-year college teachers used more praise and reinforcement, asked more questions of their students, and reflected greater verbal flexibility than did the university instructors.

FOOTNOTES

[1]More detailed infromation about FIA is available in Ned A. Flanders, Analyzing Teaching Behavior, Reading, Mass.; Addison-Wesley Publishing Co., 1970; and, in Glenn R. Johnson, Analyzing College Teaching, Manchaca, Texas: Sterling Swift Publishing Co., 1976.

[2]J.P. Guilford and Benjamin Fruchter, Fundamental Statistics in Psychology and Education, Sixth Edition, N.Y.. McGraw-Hill, 1978, page 242.

VERBAL INTERACTION IN JUNIOR/COMMUNITY COLLEGE AND UNIVERSITY CLASSROOMS: DO DISCIPLINES AND SETTINGS DIFFER?

The author was interested in obtaining data on verbal interaction within undergraduate college classrooms. He was particularly interested in finding which categories of teacher talk were predominate in such settings. Different categories of student talk were not of primary interest although total percent of student talk was important.

The author believed that the findings might be of value in generating future studies which could explore relationships between verbal interaction and student's attitudes, verbal interaction and motivation, and verbal interaction and achievement in two different college settings---junior colleges and universities. The study would also provide some initial input for a data bank of verbal interaction as it exists in undergraduate college settings. Furthermore, using analysis of variance, one could conjecture about verbal interaction differences among various disciplines.

Verbal interaction between instructors and students was viewed as a key variable in the teaching/learning setting; and, one way of obtaining such data was by use of Flanders Interaction Analysis (FIA)[1]. Flanders Interaction Analysis has ten categories of verbal talk; and, after fifteen hours of skill training observers can, every three seconds, record which category is in use. The ten categories of FIA appear on the next page.

Subjects

Twenty-nine classrooms in three junior/community colleges and nineteen classrooms in a university were used to collect data.

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SUMMARY OF FLANDERS'
CATEGORIES FOR INTERACTION ANALYSIS

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1. *ACCEPTS FEELINGS: accepts and clarifies the feeling tone of the students in a nonthreatening manner. Feelings may be positive or negative. Predicting or recalling feelings is included.

2. *PRAISES OR ENCOURAGES: praises or encourages student action or behavior. Jokes that release tension, but not at the expense of another individual: nodding head, or saying "um hum?" or "go on" are included.

3. *ACCEPTS OR USES IDEAS OF STUDENTS: clarifying, building, or developing ideas suggested by a student. As teacher brings more of his own ideas into play, shift to Category 5.

4. *ASKS QUESTIONS: asking a question about content or procedure with the intent that a student answer.

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5. *LECTURING: giving facts or opinions about content or procedures; expressing his own ideas, asking rhetorical questions.

6. *GIVING DIRECTIONS: directions, commands, or orders with which a student is expected to comply.

7. *CRITICIZING OR JUSTIFYING AUTHORITY: statements intended to change student behavior from nonacceptable to acceptable pattern; bawling someone out; stating why the teacher is doing what he is doing; extreme self-reference.

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8. *STUDENT TALK RESPONSE: talk by students in response to teacher. Teacher initiates the contact or solicits student statement.

9. *STUDENT TALK INITIATION: talk by students, which they initiate. If "calling on" student is only to indicate who may talk next, observer must decide whether student wanted to talk. If he did, use this category.

10. *SILENCE OR CONFUSION: pauses, short periods of silence, and periods of confusion in which communication cannot be understood by the observer.

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* There is NO scale implied by these numbers. Each number is classificatory; it designates a particular kind of communication event. To write these numbers down during observation is to enumerate--not to judge a position on a scale.

Procedures

During the Fall Term of 1975 and the Spring, Summer, and Fall Terms of 1976, students enrolled in the author's graduate programs received fifteen contact hours of skill training in FIA. They were encouraged to obtain permission to observe and record FIA in undergraduate college classes. Only data collected by the enrollees who had obtained a .85 or higher correlation coefficient of interobserver reliability with the author during training sessions were selected for use in this article.

After recording FIA, the observers key punched the data which were then run through a computer program available from the author. The categories of student talk were not of primary interest in this study, therefore categories 8 and 9 were collapsed into one category labeled 8/9. No distinction was made between student talk-response and student talk-initiation.

Findings

All tables are presented at the close of the article.

The cumulative data for all forth-eight classroom observations appear in Table 1. The observers recorded 39,353 tallies representing approximately thirty-two and one-half hours of time. The teachers talked about eighty percent of the total time (TT=80.97%) while the students talked about fifteen percent of the total time (ST=15.55%). The remainder of the tallies fell into the 'silence' category (SC=3.48%).

The cumulative data for all categories revealed fewer tallies in the category for lecturing than the author had anticipated (63.62%); and, when one analyzes only teacher talk, lecturing accounted for 78% of the total teacher talk tallies (78.57%). The author anticipated higher percentages for lecturing since undergraduate courses usually have large enrollments; and, instructors have large bodies of knowledge to disseminate. However, category

5 (lecturing) did have the largest percent of the total tallies when compared with the other categories.

Student talk was the next highest category emerging within the classrooms (ST= 15.55% for category 8/9). Category 4, teacher asks questions, was the third highest category in use (9.98%) followed by category 2, teacher praises (3.99%). Silence (category 10) accounted for 3.48% of the total time while category 3 (teacher uses ideas of students) used 2.36% of the total time. Category 6 (teacher gives directions), category 1 (teacher accepts the feelings of the students), and category 7 (teacher criticizes) had the least percentages of the total time (.65%, .10%, and .27%).

The forty-eight classrooms were grouped according to disciplines for an analysis of variance: 8 English classes, 8 Chemistry classes, 7 History/ Political Science classes, 6 Economics classes, 8 Psychology classes, 5 Mathematics classes, and 6 Biological Sciences classes.

Table 2 presents data for category 1 of FIA (teacher accepts the feelings of the students). No significant differences emerged among the seven groups (p= .4088). The small amount of time devoted to this category by each discipline can probably be accounted for by the fact that there is little opportunity for the instructor to pursue this category of interaction with the college students during undergraduate classes.

Significant differences did emerge for category 2 of FIA (teacher praises the students). The data in Table 3 reveal that the differences were significant at the .05 level (p= .0153). Instructors in mathematics, English, and biological sciences were more likely to praise students than were instructors in the other disciplines when one studies the group percent total time for each of the seven groups (8.30%, 5.72%, 5.00% versus 2.56%, 2.29%, 2.70%, 3.03%).

Although the percentages are rather low for category 3 (teacher accepts

and uses ideas of students), the data in Table 4 did reveal significant differences at the .05 level (p= .0461). The instructors of history/political science and biological sciences had the highest percentages for group total time for this category (3.80% and 3.72%). It is the author's contention that college instructors have not mastered the skill of pursuing student talk (responses, ideas students initiate) so the percentage of total time devoted to category three could be increased.

Table 5 presents data for category 4 (teacher asks questions). Significant differences among the disciplines did emerge at the .05 level (p= .0330). Instructors in English, economics, and mathematics devoted more time to asking questions than did the other instructors (14.04%, 13,61%, 13.80% versus 5.47%, 7.51%, 9.44%, 7.56%). Chemistry instructors devoted the least amount of time to asking questions (5.47%).

In Table 6, the data for category five (teacher lectures) indicated no significant differences among disciplines. Although the range was great (English group percent of total time equal 45.04% while Chemistry group percent of total time equal 74.95%) the high error of 34,494.44 probably signals large variances within the individual disciplines. English professors lectured the least while Chemistry professors devoted the most time to lecturing.

Table 7 presents data for category six (teacher gives directions). No significant differences emerged among disciplines. Very little time was devoted to this category by the instructors with English showing the highest amount (1.95%).

The percentages were very low for category 7 (teacher criticizes). Table 8 reveals no significant differences among disciplines. All disciplines devoted less than one percent of the total time to criticizing.

Table 9 revealed significant differences among disciplines in category 8/9 (pupil talk-teacher initiated and pupil talk-pupil initiated). The F

exceeded the .01 level of significance (p=.0034). English instructors generated more student talk than did the other disciplines (29.85% versus 8.03%, 12.86%, 12.08%, 15.00%, 16.42%, 10.62%).

The data presented in Table 10 revealed no significant differences among the disciplines for category 10 (silence).

In Table 11 one discovers significant differences among the disciplines (p=.0442). The indirect influence categories are 1, 2, 3, and 4 while the direct categories are 5, 6, and 7. This ratio gives some indication of the directness or indirectness of the instructor. The more the instructor accepts feelings, praises, uses student ideas, and asks questions, the more indirect is his influence.

Table 12 presents data about the number of questions the instructor asked the students. Although no significant differences emerged (p=.0511), the high group means for English and mathematics almost created significant differences at the .05 level.

The data presented in Table 13 revealed no significant differences among the disciplines (p=.0617). However, the high frequency of using reinforcement comments such as "good" or "fine" in mathematics and English classes almost generated significant differences at .05 level.

Two-year Colleges vs. University

Another interesting aspect of the study involved a comparison of verbal interaction data from two-year colleges with verbal interaction data from the university setting (Table 14). After running analysis of variance, those variables with a significant F-ratio were further scrutinized using an est w^2 formula: for samples from two populations where test of significance has been made by the t test, the estimate (strength of association of variance) can be obtained by

$$\text{est } w^2 = \frac{t^2-1}{t^2 + N_1 + N_2 - 1}$$

(t^2 is approximated by F in two group cases)^2.

The two-year college instructors, as a total group, used twice as much time praising their classes than did the university instructors (p=.001); and, the w^2 was twenty percent.

The two-year college instructors used more time asking questions than did the university instructors (p=.001); and, the w^2 was nineteen percent.

The reverse was true for silence; there were twice as many tallies recorded for silence in university classrooms than in two-year college classrooms (p=.001); and, the w^2 was eighteen percent.

The two-year college instructors were far more flexible than were the university professors if one studies the I/D ratio (indirect/direct ratio). the p was .004; and, the w^2 was fourteen percent.

Instructors in the two-year colleges used twice as many reinforcers than the university instructors (p=.016); and, the w^2 was nine and one-half percent.

Two-year college instructors asked almost twice the number of questions than did college professors (53+ questions vs. 28+ questions). The p was .001; and, the w^2 was eighteen percent.

Discussion

This very limited discriptive study has revealed striking differences between disciplines and between two-year college instructors and university instructors when analyzing verbal interaction within classrooms. The time has come when we must concentrate our efforts on more experimental studies involving some of the key variables discussed in this paper; i.e., praise and reinforcers, asking questions of students, using ideas of students, student participation, and increasing flexibility among college instructors.

More comprehensive observations with larger numbers of classes for a specific discipline incorporating more controls would be highly desirable. Perhaps six different observations of the same professor with all instructors teaching the identical unit of study during the same two weeks seems advisable.

There are some indications that mastery learning is enhanced when instructors use a pattern of asking questions immediately following the presentation of some relevant material and then reinforce the correct responses by the students. English and mathematics instructors appeared to do the better job with this type of pattern according to the data provided for this article. If future studies continue to reveal low percentages for chemistry and psychology classes in asking questions and using reinforcement, it may be advisable for professors in those disciplines to engage in some training procedures involving such skills.

Table 1

Cumulative Interaction Analysis Data from Undergraduate College Classrooms - 1975-1976

N = 48

Time = Approximately 32 1/2 hours of F.I.A.

Total Tallies = 39,353

Total Teacher Talk Tallies = 31,863 (TT = 80. 97%)

Total Student Talk Tallies = 6,121 (ST = 15.55%)

Categories	1	2	3	4	5	6	7	8/9	10
Total Tallies	40	1,570	930	3,926	25,036	254	107	6,121	1,369
% Total Time	.1%	3.99%	2.36%	9.98%	63.62%	.65%	.27%	15.55%	3.48%
% Teacher Talk only	.13%	4.93%	2.92%	12.32%	78.57%	.80%	.34%		

Table 2

ANOVAR-Seven Groups-Category 1 "Accepts Feelings of Students"

	Mean Square	df	F	p
Groups	5.47	6	1.049	.4088
Error	5.22	44		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	0.13	0.25	1.29
Group % Total Time	00.10%	00.03%	00.13%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	0.0	2.25	1.60
Group % Total Time	00.00%	00.26%	00.23%

	Biological Sciences (N=6)
Group Mean	0.33
Group % Total Time	00.04%

Table 3

ANOVAR-Seven Groups-Category 2 "Praise"

	Mean Square	df	F	p
Groups	1625.44	6	3.02	.0153
Error	537.84	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	51.25	19.13	22.14
Group % Total Time	5.72%	2.56%	2.29%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	20.00	25.75	57.60
Group % Total Time	2.70%	3.03%	8.30%

	Biological Sciences (N=6)
Group Mean	39.67
Group % Total Time	5.00%

Table 4

ANOVAR-Seven Groups-Category 3 "Accepts and Uses Ideas of Students"

	Mean Square	df	F	p
Groups	775.63	6	2.37	.0461
Error	327.01	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	15.00	14.13	36.71
Group % Total Time	1.67%	1.89%	3.80%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	7.33	22.25	8.20
Group % Total Time	.99%	2.62%	1.18%

	Biological Science (N=6)
Group Mean	29.50
Group % Total Time	3.72%

Table 5

ANOVAR-Seven Groups-Category 4 "Asks Questions"

	Mean Square	df	F	p
Groups	5919.34	6	2.57	.0330
Error	2306.56	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	125.75	40.75	72.57
Group % Total Time	14.04%	5.47%	7.51%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	100.67	80.25	95.80
Group % Total Time	13.61%	9.44%	13.80%

	Biological Sciences (N=6)
Group Means	60.00
Group % Total Time	7.56%

Table 6

ANOVAR-Seven Groups-Category 5 "Lectures"

	Mean Square	df	F	p
Groups	54210.50	6	1.57	.1795
Error	34494.44	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	403.38	559.88	651.86
Group % Total Time	45.04%	74.95%	67.44%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	497.67	551.00	407.20
Group % Total Time	67.28%	64.81%	58.66%

	Biological Science (N=6)
Group Mean	556.17
Group % Total Time	70.06%

Table 7

ANOVAR-Seven Groups-Category 6 "Gives Directions"

	Mean Square	df	F	p
Groups	289.64	6	1.86	.1106
Error	155.66	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	17.50	8.13	0.14
Group % Total Time	1.95%	.97%	.01%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	0.67	2.88	4.60
Group % Total Time	.09%	.34%	.66%

	Biological Sciences (N=6)
Group Mean	0.83
Group % Total Time	.10%

Table 8

ANOVAR-Seven Groups-Category 7 "Criticizes"

	Mean Square	df	F	p
Groups	10.68	6	0.82	.5605
Error	12.99	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	2.38	1.13	2.29
Group % Total Time	.26%	.15%	.24%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	4.83	2.13	0.60
Group % Total Time	.65%	.25%	.09%

	Biological Sciences (N=6)
Group Mean	2.33
Group % Total Time	.29%

Table 9

ANOVAR-Seven Groups-Category 8/9 "Pupil Talk-Teacher Initiated" and "Pupil Talk-Pupil Initiated"

	Mean Square	df	F	p
Groups	35645.66	6	3.986	.0034
Error	8943.51	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	267.38	60.00	124.29
Group % Total Time	29.85%	8.03%	12.86%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	89.33	127.50	114.00
Group % Total Time	12.08%	15.00%	16.42%

	Biological Sciences (N=6)
Group Mean	84.33
Group % Total Time	10.62%

Table 10

ANOVAR-Seven Groups-Category 10 "Silence"

	Mean Square	df	F	p
Groups	2411.52	6	2.265	.0554
Error	1064.60	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Mean	12.88	46.75	55.29
Group % Total Time	1.44%	5.94%	5.72%

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Mean	14.67	36.13	4.60
Group % Total Time	1.98%	4.25%	.66%

	Biological Sciences (N=6)
Group Mean	20.67
Group % Total Time	2.60%

Table 11

ANOVAR-Seven Groups-Indirect/Direct Ratio (I/D)

	Mean Square	df	F	p
Groups	.0355	6	2.396	.0442
Error	.0148	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Means	.33	.11	.19

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Means	.21	.20	.27

	Biological Sciences (N=6)
Group Means	.20

Table 12

ANOVAR-Seven Groups - Number of Questions Raised by Instructor

	Mean Square	df	F	p
Groups	1575.90	6	2.312	.0511
Error	681.74	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Means	60.88	27.38	33.14

	Economics (N=6)	Psychology (=8)	Mathematics (N=5)
Group Means	44.00	39.25	71.20

	Biological Sciences (N=6)
Group Means	37.33

Table 13

ANOVAR-Seven Groups - Number of Verbal Reinforcers used by Instructor

	Mean Square	df	F	p
Groups	1055.04	6	2.202	.0617
Error	479.10	41		

	English (N=8)	Chemistry (N=8)	History/Political Science (N=7)
Group Means	37.75	16.13	20.14

	Economics (N=6)	Psychology (N=8)	Mathematics (N=5)
Group Means	16.33	23.38	52.60

	Biological Sciences (N=6)
Group Means	30.33

Table 14

Significant Differences at .05 level Two-year Colleges vs University - Analysis of Variance

Variable	Mean Square	D.F.	F-ratio	p	w^2
Teacher	8.9838	47	13.115	.001	20%
Praises	SS(B) 93.6733	1			
	SS(W) 7.1427	46			
	2-yr 5.0724				
	Univ 2.2138				
Teacher	45.3885	47	12.388	.001	19%
Asks	SS(B) 452.6172	1			
Question	SS(W) 36.5357	46			
	2-yr 12.6793				
	Univ 6.4000				
Silence	14.3850	47	11.773	.001	18%
	SS(B) 137.7759	1			
	SS(W) 11.7026	46			
	2-yr 2.0724				
	Univ 5.5368				
I/D	.0175	47	8.892	.004	14%
	SS(B) .1329	1			
	SS(W) .0149	46			
	2-yr .2576				
	Univ .1500				

Reinforcers		552.6223	47	6.066	.016	9.5%
	SS(B)	3025.9688	1			
	SS(W)	498.8538	46			
	2-yr	33.5517				
	Univ	17.3158				
Number of Teacher Questions		795.8870	47	11.859	.001	18%
	SS(B)	7666.9375	1			
	SS(W)	646.5161	46			
	2-yr	53.8965				
	Univ	28.0526				